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ABSTRACT

Recommendations for the preparation of health professionals in Illinois are made in order to: (1) ensure that an adequate number of health professionals are educated to meet the needs of Illinois citizens; (2) improve the distribution of available health manpower within the State; (3) enhance the access to health professions education programs for students; (4) maintain and improve the quality and breadth of the State's health professions education programs; and (5) meet these goals at a minimal reasonable cost to the taxpayers of the State. Specific recommendations discuss: (1) nursing and nursing assistant education; (2) allied health professionals, including clinical laboratory professionals and radiologic technologists, physical, occupational, respiratory, and radiation therapists, dental assistants, dental hygienists, and dental laboratory technicians, medical artists, medical dietitians, medical record professionals, and operating room technicians; (3) public health and health administration education; (4) podiatric medical education; (5) veterinary medicine education; and (6) pharmacy education. (Author/KE)

September 9, 1975

OVERVIEW TO HEALTH PROFESSIONS EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

OVERVIEW TO HEALTH PROFESSIONS EDUCATION

Increasingly, the citizens of Illinois, indeed of the country as a whole, are coming to regard the availability of adequate health care as an essential part of their lives. They recognize that good health care depends upon well-educated health professionals. A significant amount of tax money has been allocated in Illinois for the preparation of such professionals. It is the Illinois Board of Higher Education's responsibility to recommend policies and budgets to the Governor and General Assembly for educational programs for health professionals. The Board is exercising this responsibility in an attempt to:

- .. ensure that an adequate number of health professionals are educated to meet the needs of Illinois citizens for health care;
- .. improve the distribution of available health manpower within the State;
- .. enhance the access to health professions education programs for students;
- .. maintain and improve the quality and breadth of the State's health professions education programs;
- .. meet these goals at a minimal reasonable cost to the taxpayers of the State.

Meeting the Need for Health Professionals and Improving Health Manpower Distribution.

In 1968, the Board of Higher Education published Education in the Health Fields for State of Illinois. This Report recommended that the number of health professionals educated in Illinois be increased markedly. There has been a substantial increase since 1968 in the number of

health professionals graduated from Illinois institutions. The present recommendations urge that the expansion continue to accomplish the maturation of the programs begun between 1968 and 1975. By 1980 the following numbers of graduates are projected:

- 1,297 physicians, compared to 606 in 1968,
- 428 dentists, compared to 246 in 1968,
- about 8,000 nurses, compared to about 4,000 in 1968,
- 170 pharmacists, compared to about 100 in 1968,
- 125 public health professionals, compared to none in 1968;
- 86 veterinarians, compared to 51 in 1968.

The reports that accompany this Overview indicate that by 1980, if present projections are attained, the State of Illinois will rank high among all of the states in terms of the number of graduates of its health professions education programs. There are also indications that many of the needs for health manpower will be met, if the historical problems of retention and distribution of Illinois graduates can effectively be addressed.

In the past only a small percentage of the graduates of the State's medical schools has established practice in Illinois. Furthermore, the graduates who do stay, and the in-migrants who choose to come to Illinois, are not distributed geographically to meet the needs of many people, particularly the residents of inner-city and rural areas.

In addressing the retention and distribution problems, new health professions education programs have been begun throughout the State. There are components of medical schools now in Rockford, Peoria, Urbana/Champaign, Springfield, and Carbondale, a new dental school in Alton, and several new nursing programs throughout the State. There is evidence that suggests that graduates of professional education programs tend to remain in the geographic area where they complete their education. The current recommendations urge continued support of the geographically dispersed system of educational programs.

In the case of medical education, a physician's training is complete only after an appropriate internship or residency program. There is strong evidence that a physician tends to choose a practice location near the area where his graduate medical education is completed. The recommendations suggest an expansion of the number of residency positions throughout the State. It is recommended that the expansion increase the number and percentage of primary-care physicians being educated.

Improving Access.

Since 1968, the number of Illinois residents entering medical school per capita has increased by 50 percent; by 1980 it will have doubled. Similarly, there are more opportunities today for the students of Illinois to enter dental, nursing, and other health schools than ever before. Not only are the number of positions in these programs greater, but the programs are more geographically dispersed so that students may pursue their education in many health fields close to their homes.

Emphasis is placed on career-mobility, that is, the opportunity for a practicing health professional to add to his or her skills to progress to a higher-level job. Educational programs are recommended to increase opportunities for such students.

Access must continue to be improved for persons from groups historically under-represented in the health professions. It is recommended that educational programs set and meet affirmative action commitments, with the the goal being to enroll and retain a student population which ethnically and geographically reflects the population of Illinois.

Maintaining and Improving Quality and Breadth.

It is recommended that cooperation among the institutions providing education for health professionals be promoted. The medical schools are encouraged to expand their network of clinical affiliations. It is also suggested that they collaborate with nursing education, allied health education, and other health education programs. Such collaboration is likely to occur on a regional basis and offers the possibility of more effective use of limited clinical resources, broader educational experiences for students, career mobility, and education of a health team, composed of students from several health disciplines. Continued emphasis is placed on the regionalization, not only of medical education, but the other health disciplines as well. The concepts underlying the Area Health Education System of the College of Medicine of the University of Illinois and the regional health education centers of the School of Medicine of Southern Illinois university are supported.

Recommendations are made that will place the major responsibility for graduate medical education and allied health professions education

with educational institutions. These recommendations emphasize that medical residencies and clinical education for students of the allied health professions are primarily educational experiences. Consortial efforts among the educational and clinical institutions are encouraged.

The education of health professionals does not stop at graduation. Modern health care is complex and is changing rapidly. It is essential that continuing education be made available for practicing health professionals.

Recommendation 1: The institutions of higher education offering educational programs in the health professions should emphasize continuing education for the practicing health professionals in Illinois. Continuing education opportunities should be provided throughout the State.

More and more of the members of the various health professions are having to collaborate directly in the provision of health-care services. The physician, the nurse, the pharmacist, and the medical technologist, for example, provide highly interdependent components of the care of the patient. The effectiveness of the health-care "team" can be improved if the educational programs for the health professions provide a forum for the students to learn the ways in which the professions complement each other.

Recommendation 2: All institutions involved in the education of health professionals should promote the education of the health-care team. To the extent possible, students of the various health professions should have common learning experiences.

Providing Programs at Reasonable Costs.

The citizens of Illinois have made a substantial investment in the education of health professionals. This has been particularly true since 1968, as numbers of and enrollments in health professions educational programs have increased markedly. The current recommendations urge that the commitment of resources continue so that the developing programs may reach maturation. The additional resources required between now and 1980 to accomplish the recommendations in these reports are relatively small compared to the current commitment of State resources. In fiscal year 1976 State higher education dollars related to health professions education will total approximately $135 million for operating budgets. It is estimated that the implementation of the recommendations for health professions education will add about $10 million to the total by 1980. Additional capital expenditures totaling $15 to $30 million will likely be required.

Although the total dollar commitment of the State is large, there is evidence that Illinois is meeting its expansion goals at a reasonable cost. The primary example is the expansion of medical education in both the public and nonpublic sectors. The use of existing resources -- community hospitals for the public regional medical schools, and the existing private medical schools -- has made the medical education expansion cost/effective. The Board of Higher Education, and the Health Education Commission, should continue to monitor closely the costs of the health occupations education programs to ensure that the taxpayers' monies are used wisely in implementing the recommendations herein.

September 9, 1975

NURSING AND NURSING ASSISTANT EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

I. INTRODUCTION

Nursing encompasses a set of activities relating to the provision of care to patients and others in need of health care. Nursing activities involve attention to the physical comfort of patients, and the identification, assessment, and resolution of health problems, as well as the prevention of illness. Nurses provide health care in a variety of settings. The professional nurse may be employed in a hospital with responsibilities for direct patient care, administration, research, and teaching. Nurses provide care in long-term care facilities. Other types of nursing settings encompass public health nursing, occupational health (industrial) nursing, private duty nursing, teaching in educational institutions, and working with the physician or dentist in private practice. Nursing also has its clinical specialties, e.g., pediatric nurse, obstetric nurse, psychiatric or mental health nurse, and intensive care nurse.

Nursing activities are performed by persons with varying responsibilities. Registered nurses provide both basic and more complex nursing care. They work in conjunction with physicians, dentists, and other health professionals. Registered nurses supervise all nursing activities which relate directly or indirectly to patient care and coordinate the nursing care plan with the medical plan. They assume responsibility for their own standards, acts, and judgments.

The registered nurse is a graduate of one of three types of programs:

- a two-year associate degree program, typically having 18 months of instruction, offered in community colleges;
- a two to three-year diploma program, typically having 22 or more months of instruction, offered in hospitals;
- a four-year bachelor's degree program offered in colleges and universities, usually with two or three years in the nursing major.

Another category of nurse is the licensed practical nurse (LPN). Educational programs are conducted in vocational schools, technical schools, hospitals, and community colleges. Education of LPNs usually lasts one year, combining academic work and clinical experience. The LPN works with registered nurses, most often as an assistant and bedside nurse. Because of the expanding responsibilities of registered nurses, the LPN is providing a large share of bedside nursing care.

Nursing assistants in hospitals and nursing homes help nurses in providing many services related to the comfort and welfare of patients. Nursing aide is a term usually applied to a female assistant, who helps practical and registered nurses by performing less skilled tasks in the care of patients. Orderly and attendant are titles usually applied to a male nursing assistant. They perform a variety of duties for male patients and assist practical and registered nurses in the care of the physically ill, the mentally ill, and the mentally retarded. There are no formal standards for the training of nursing assistants. Vocational centers, high schools, clinics, hospitals, and community colleges provide instructional programs.

The accumulation of knowledge along with expansion of techniques and skills utilized for the prevention, treatment, and cure of disease has led to changes in nurse and physician roles. The nurses' scope of activities has expanded rapidly. The depth and quality of professional knowledge has increased. The new professional roles dictate a division of nursing along educational as well as functional lines. Not only must nurses be educated to provide the more traditional bedside nursing care, but there is a need for nurses educated at the baccalaureate

and graduate level for the provision of nursing care in the new and expanding professional roles and for leadership in clinical, educational, and research settings.

This document has benefited from the advice of numerous individuals, institutions, groups, and agencies which have an interest in nursing service and nursing education. To be particularly singled out is the Illinois Implementation Commission on Nursing (IICON) which has adopted and published a report, "Nursing Education in Illinois: A Reassessment and a Plan, 1975-80." In most respects the IICON report is complementary to the Health Education Commission report, the two differing primarily in emphasis and detail.

II. SUPPLY OF AND DEMAND FOR NURSES

National Comparison

In the United States in 1972, approximately 1,128,000 registered nurses were relicensed and responded to a nationwide survey. Of these, 795,000 or 70.5 percent of the total, were employed. The number of working nurses per 100,000 population who were relicensed in 1972 was 380. In comparison Illinois had a total of about 61,000 registered nurses who were relicensed and responded to the survey. Of this total, 73.6 percent, or about 45,000, were employed. Based on this figure, Illinois has 397 employed nurses per 100,000 population. The total number of active nurses who were licensed in Illinois in 1972, however, is estimated to be about 57,000*. Since about 86 percent of the active nurses are employed in Illinois, the actual number of employed nurses in Illinois is about 49,000, or 440 per 100,000 population.

The number of working nurses per 100,000 for each state for 1966 and 1972 is displayed in Table II-1. Although the number of employed nurses per capita rose 20 percent in six years, Illinois fell from 22nd to 26th place among the states. Illinois has four percent more employed nurses per capita than the nation as a whole.

Selected characteristics of employed registered nurses in Illinois and in the nation are displayed in Table II-2. These statistics indicate

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*This figure includes new licentiates, nurses being reinstated and nurses granted endorsement, as well as nurses who were relicensed. It is derived from the fact that there were 77,601 nurses licensed in 1972 and that 73.6 percent of the nurses surveyed were active.

Table II-1

Employed Registered Nurses per 100,000 Population by State: 1972 and 1966*

1972 Rank Order	1972 Number per 100,000	State	1966 Number per 100,000	1966 Rank Order
1	673	District of Columbia	454	4
2	649	Massachusetts	532	2
3	612	Vermont	447	5
4	579	Connecticut	536	1
5	572	New Hampshire	521	3
6	519	Pennsylvania	395	12
7	514	Delaware	409	9
8	491	Colorado	425	6
9	486	Minnesota	404	11
10	485	Rhode Island	409	8
11	485	New York	408	10
12	464	Maine	414	7
13	462	South Dakota	308	[illegible]
14	455	North Dakota	329	23
15	451	Montana	354	19
16	443	Nebraska	329	24
17	432	New Jersey	362	18
18	428	Arizona	366	16
19	425	Wyoming	379	13
20	422	Alaska	223	41
21	420	Washington	374	14
22	416	Wisconsin	338	21
23	413	Iowa	362	17
24	400	Kansas	303	29
25	399	Oregon	345	20
26	397	Illinois	330	22
27	389	Ohio	315	26
28	380	Hawaii	321	25
29	363	Maryland	277	31
30	353	Florida	369	15
31	350	West Virginia	260	33
32	348	Virginia	258	35
33	335	Michigan	277	31
34	334	California	312	27
35	329	Idaho	280	30
36	323	Nevada	246	38
37	318	North Carolina	244	39
38	312	Missouri	247	37
39	298	Indiana	259	34
40	295	South Carolina	217	42

Table II-1 (Continued)

1972 Rank Order	1972 Number per 100,000	State	1966 Number per 100,000	1966 Rank Order
41	285	Utah	233	40
42	263	Georgia	156	50
43	258	New Mexico	250	36
44	256	Kentucky	198	43
45	246	Oklahoma	188	44
46	245	Louisiana	187	46
47	240	Texas	188	45
48	233	Tennessee	175	47
49	226	Mississippi	157	49
50	223	Alabama	168	48
51	190	Arkansas	133	51
	380	United States	313	

* These data include only registered nurses who were relicensed in 1966 and 1972.

Sources: R.N.'s 1966, An Inventory of Registered Nurses, American Nursing Association, New York, 1966.

The Nation's Nurses, 1972 Inventory of Registered Nurses, American Nurses Association, Kansas City, 1974.

Table II-2

Selected Characteristics of
Employed Registered Nurses: 1972

	Illinois	United States
Age		
55 and over	18.6%	24.0%
Under 35	33.7	29.2
Median Age	38.7	39.4
Employment field		
Hospital	66.7%	64.2%
Nursing home	6.2	7.0
School of nursing	3.5	3.7
Private duty	3.4	5.0
Public health	3.9	5.0
Office nurse	7.9	6.7
School nurse	3.4	3.8
Industrial nurse	3.6	2.5
Other/unreported	1.4	2.1
Highest educational degree		
Less than baccalaureate	81.3%	80.5%
Baccalaureate	14.5	14.3
Masters	2.7	3.2
Doctorate	0.1	0.2
Unreported	1.4	1.8

Source: The Nation's Nurses, 1972 Inventory of Registered Nurses, American Nursing Association, Kansas City, 1974.

that the Illinois registered nurses are statistically comparable in employment field and degrees obtained to the nation's registered nurses and are somewhat younger. A larger percentage of nurses are under 35 in Illinois than are under 35 nationally.

Illinois Nurses

The distribution of employed registered nurses by county and planning region is shown in Table II-3 for both 1966 and 1972. The growth in nurses per capita has been about four percent a year for Illinois. The per capita growth in the six-year period has ranged from about 18 percent for regions 3A and 5 to over 30 percent in regions 2 and 4. Regions 1A, 1B, and 3A had more employed nurses in 1972 per capita than the 1968 report of the Illinois Study Commission on Nursing* recommended, namely 440 registered nurses per 100,000. Region 3B had nearly reached this figure in 1972. Only regions 4 and 5 were substantially below this target figure.

As Table II-4 shows, the number of employed Illinois licensed practical nurses, who renewed their licenses, has increased by about 40 percent between 1967 and 1974, an annual increase of five percent. By 1974 nearly 17,000 Illinois practical nurses, who were relicensed, were in the labor force in Illinois. Approximately 27 percent are 55 years of age or older and 33 percent are under 35. The median age is about 43 years old. Nearly 60 percent of the employed practical nurses work in hospitals, 20 percent in nursing homes, and 20 percent in other settings.**

*Nursing in Illinois, Illinois Study Commission on Nursing, Chicago, Illinois, January, 1968.

**Licensed Practical Nurses Who Renewed Illinois Licenses in 1974, Illinois Implementation Commission on Nursing, Chicago, Illinois, April, 1975.

Table II-3

Employed Registered Nurses by Illinois County: 1966 and 1972*

1972			1966	
Number	Number/ 100,000	Region and County	Number/ 100,000	Number
2,702	468	Region 1-A	368	2,001
1,224	493	Winnebago	344	789
378	505	DeKalb	365	220
241	381	Whiteside	323	205
282	573	Stephenson	502	242
122	279	Ogle	304	149
245	668	Lee	442	178
118	439	Boone	398	87
40	185	Jo Daviess	324	69
52	287	Carroll	316	62
4,578	483	Region 1-B	405	3,640
1,371	692	Peoria	450	884
959	578	Rock Island	430	685
323	269	Tazewell	292	320
594	531	LaSalle	435	505
379	617	Knox	449	292
189	344	Henry	371	188
164	378	Fulton	453	186
197	504	Bureau	506	181
164	405	McDonough	379	109
68	241	Woodford	270	78
81	380	Warren	294	63
53	321	Mercer	282	47
14	108	Marshall	322	46
3	37	Henderson	149	11
4	49	Stark	333	26
15	283	Putnam	418	19
28,078	394	Region 2	300	20,594
21,073	378	Cook	281	15,149
1,906	372	DuPage	410	1,617
1,565	402	Lake	324	1,144
1,557	618	Kane	459	1,110
997	386	Will	326	741
357	315	McHenry	295	295
503	507	Kankakee	377	384
81	276	Grundy	370	88
39	140	Kendall	308	66

Table II-3 (Continued)

1972 Number	1972 Number/ 100,000	Region and County	1966 Number/ 100,000	1966 Number
2,649	476	Region 3-A	401	2,213
1,034	642	Sangamon	530	811
417	580	Adams	479	338
90	201	Macoupin	257	117
333	900	Morgan	666	246
107	316	Christian	257	92
165	490	Logan	410	146
101	333	Montgomery	264	81
73	319	Hancock	352	84
65	351	Pike	305	56
43	235	Jersey	214	38
53	327	Greene	336	56
32	194	Mason	189	28
43	305	Cass	298	42
17	168	Menard	220	20
40	471	Schuyler	256	21
19	317	Scott	204	12
6	130	Calhoun	112	6
11	175	Brown	333	19
3,312	434	Region 3-B	353	2,574
830	488	Champaign	385	560
549	435	Macon	318	401
557	517	McLean	484	431
570	600	Vermillion	463	457
154	297	Coles	286	125
180	431	Livingston	301	125
100	306	Iroquois	323	109
46	211	Shelby	236	53
61	277	Edgar	263	58
56	311	Douglas	236	52
44	267	DeWitt	317	50
79	506	Ford	350	57
17	107	Clark	195	31
39	231	Piatt	218	34
22	176	Moultrie	194	25
8	80	Cumberland	63	6
2,097	326	Region 4	252	1,581
932	322	St. Clair	221	632
893	350	Madison	309	760
116	361	Randolph	222	65
62	216	Clinton	138	29
24	120	Monroe	259	44
34	256	Bond	189	26
36	269	Washington	193	25

Table II-3 (Continued)

Number	Number/ 100,000	Region and County	Number/ 100,000	Number
1,367	263	Region 5	223	1,100
172	299	Jackson	290	130
146	294	Williamson	238	108
93	242	Marion	232	88
79	205	Franklin	170	60
86	267	Jefferson	168	49
61	235	Saline	171	39
98	403	Effingham	241	57
44	219	Fayette	198	41
44	202	Crawford	212	43
49	236	Perry	217	39
58	319	Lawrence	303	52
32	190	White	212	41
30	180	Wayne	158	28
99	532	Richland	462	73
93	550	Union	424	69
29	203	Clay	172	26
20	140	Massac	150	21
36	281	Wabash	155	21
34	286	Alexander	284	40
14	133	Jasper	74	8
9	96	Pulaski	121	11
11	126	Hamilton	150	13
8	92	Johnson	192	12
9	114	Gallatin	140	9
3	43	Edwards	154	11
6	122	Hardin	180	9
4	93	Pope	61	2
44,783	397	State Total	316	33,703

* These data include only registered nurses who were relicensed in 1966 and 1972.

Sources: Health Manpower: A County and Metropolitan Area Data Book, DHEW, Rockville, Maryland, June, 1971.

The Nation's Nurses, 1972 Inventory of Registered Nurses, American Nurses Association, Kansas City, 1974.

Table II-4

Licensed Practical Nurses
in Illinois: 1967 and 1974*

	1967		1974	
	Number	Percent	Number	Percent
Licensed	14,571	100.0	20,309	100.0
Working	12,146	83.4	16,938	83.4

* These data include only practical nurses who were relicensed in 1966 and 1974. The figures are adjusted for nonrespondents to the surveys.

Sources: L.P.N.'s: 1967, An Inventory of Licensed Practical Nurses, DHEW, 1971.

Licensed Practical Nurses Who Renewed Illinois Licenses in 1974, Illinois Implementation Commission on Nursing, Chicago, April, 1975.

Demand for Nurses in Illinois

A survey of Illinois hospitals, long-term care facilities, and community health agencies in Illinois was conducted in mid-1974 by the Illinois Implementation Commission on Nursing to determine the perceived need of these institutions for nurses. A summary of the results of the survey is displayed in Table II-5. Such survey data must be interpreted cautiously. They represent the number of budgeted vacancies at one point in time, and, as such, reflect extant economic conditions, employment market variations, and a tendency to mirror what is rather than what should be. Nonetheless, the data are instructive and useful to gain a general impression of the market for nurses. The surveyed institutions had about 2,300 and 600 budgeted vacancies for registered nurses and licensed practical nurses, respectively. If the non-respondent institutions have proportionally as many budgeted vacancies, the totals are approximately 5,000 and 2,100. Over 60 percent of the budgeted vacancies for registered nurses are in region 2 and 10 percent are in region 3B. Region 2 has about 50 percent of the budgeted vacancies for licensed practical nurses and region 3B has 15 percent.

Data on the level of education employers desire for nurses to fill the budgeted vacancies were obtained from the survey. These results are summarized in Table II-6. Employers desire to fill about one-half the budgeted vacancies for registered nurses with diploma graduates, about one-third with baccalaureate graduates, and one-sixth with associate degree nurses. A higher proportion of baccalaureate graduates is sought in regions 1B, 2, and 3B than in other regions of the State.

Table II-5

Budgeted Vacancies for Registered Nurses and Practical Nurses in Illinois: Respondents to Survey

Region	Hospital			Long-Term Care			Community Health Agencies		
	Practical Nurse	Registered Nurse	Response Rate	Practical Nurse	Registered Nurse	Response Rate	Practical Nurse	Registered Nurse	Response Rate
1A	26	53	44%	16	33	32%	0	4	71%
1B	9	105	63%	19	18	19%	0	17	56%
2	145	1,383	54%	119	76	14%	0	45	57%
3A	22	78	50%	13	12	15%	0	15	82%
3B	116	195	52%	26	35	21%	0	2	60%
4	5	51	50%	26	18	18%	3	9	73%
5	29	87	53%	20	12	11%	0	16	50%
Total	352	1,953	53%	239	204	17%	3	107	61%

Source: Employers' Perceived Needs for Registered Nurses and Licensed Practical Nurses in Illinois Hospitals, Long-Term Care Facilities, and Community Health Agencies in 1974, Illinois Implementation Commission on Nursing, Chicago, April, 1975.

Table II-6

Distribution of Budgeted Vacancies for Nurses by Desired Level of Preparation

Region	Practical Nurse	Registered Nurses					
		Diploma	Associate Degree	Baccalaureate	Masters	Doctoral	Not Specified
1A	32%	42%	14%	11%	1%	0%	1%
1B	17	35	9	21	7	0	11
2	15	28	12	28	6	-	10
3A	25	57	2	11	4	0	0
3B	38	18	2	14	5	0	23
4	30	51	6	6	4	0	3
5	30	51	2	12	4	0	1
Total	21	32	9	23	5	-	10

Source: Employers' Perceived Needs for Registered Nurses and Licensed Practical Nurses in Illinois Hospitals, Long-Term Care Facilities, and Community Health Agencies in 1974, Illinois Implementation Commission on Nursing, Chicago, April, 1975.

Among the major employers of masters and doctoral-level nurses are educational institutions. In 1973 there were 162 reported budgeted vacancies for nurse educators in Illinois.* In addition, the Illinois Implementation Commission on Nursing survey also shows an unmet demand in 1974 for about 300 masters and doctoral-level nurses in clinical facilities and community health agencies. An estimate of a total of 500 budgeted vacancies for graduate nurses is probably conservative.

* Statistical Information on the Registration and Education of Professional and Practical Nurses, 1973, Illinois Department of Registration and Education, Chicago, 1974.

III. NURSING EDUCATION PROGRAMS IN ILLINOIS

The 1968 Illinois Board of Higher Education report, Education in the Health Fields for State of Illinois, and the 1968 Illinois Study Commission on Nursing report, Nursing in Illinois, both encouraged an expansion of nursing education at the associate, baccalaureate, and masters degree levels. Also recommended was the establishment of a doctoral-level program in nursing. The doctorate program is now a reality; a Ph.D. in nursing will be initiated by the University of Illinois in the fall of 1975.

The number of each of the various types of nursing education programs in Illinois is displayed in Table III-1 for 1968 and 1974. In the six-year period shown there has been a marked increase of collegiate programs and a decline in diploma programs. There are now at least two associate and/or baccalaureate degree programs in every region in the State. There are also at least two licensed practical nurse programs in each region.

The number of graduates of nursing education programs has grown substantially since 1968 (Table III-2). Graduates from baccalaureate programs have nearly tripled and graduates from diploma and associate degree programs together have increased by about 30 percent. The addition to the pool of people eligible for initial licensing as registered nurses, from Illinois educational programs, increased from about 2,400 in 1968 to about 3,500 in 1974. Practical nursing programs have increased their graduates by about 30 percent in the same period of time.

Table III-1

Nursing Education Programs in Illinois: 1968 and 1974

Region	Masters		Baccalaureate		Diploma		Associate		Practical	
	1968	1974	1968	1974	1968	1974	1968	1974	1968	1974
1A	0	1	1	1		3		2		4
1B	0	0	0	1		6		4		5
2	5	6	6	11		17		17		11
3A	0	0	0	1		3		1		3
3B	0	0	1	1		3		1		5
4	0	1	1	1		0		3		2
5	0	0	0	0		0		3		5
Total	5	8	9		51	32	16	31	33	35

Sources: Statistical Information on the Registration and Education of Professional and Practical Nurses, 1973, Illinois Department of Registration and Education, Chicago, 1974.

Nursing Education in Illinois; A Reassessment and a Plan, 1975-80, Illinois Implementation Commission on Nursing, Chicago, 1975.

Table III-2

Graduates of Illinois Nursing Education Programs: 1968 and 1974

	1968	1974
Masters	45	138
Baccalaureate	312	907
Diploma	2,043	1,450
Associate	191	1,423
Practical	1,469	1,879

Sources: Statistical Information on the Registration and Education of Professional and Practical Nurses 1969, Department of Registration and Education, Chicago, 1970.

Nursing Education in Illinois: A Reassessment and a Plan, 1975-80, Illinois Implementation Commission on Nursing, Chicago, 1975.

By 1980 the number of graduates of nursing education programs is likely to have changed dramatically from the 1974 graduation rate. Many of the existing masters and baccalaureate programs are new. Some have not yet graduated a class and others have graduated classes with limited enrollments. The same is true to a somewhat lesser extent with the associate degree programs. The graduation rate of diploma nursing schools is likely to decline if past trends are continued. An average of three diploma schools have closed per year since 1968. The graduation rate of licensed practical nurses is unlikely to show a large increase or decline in the next half a decade, barring a major change in licensing or financing.

Table III-3 shows the projected number of graduates from doctoral, masters, and baccalaureate programs by 1980. These figures are based, in most part, on individual institutional projections, predicated upon achieving the necessary financial support and recruiting qualified faculty. These projected graduation figures for doctoral and baccalaureate nurses exceed the average number of nursing graduates required* per year over the period 1975 to 1980. While there are no good estimates of the number of graduates in 1980 from associate degree and diploma programs, it appears likely that there will be in excess of 3,000 graduates per year from these programs. This amount is well in excess of the IICON "requirement" of 1,758. It is reasonable to assume that the licensed practical nurse programs in Illinois will graduate 1,500 to 2,000 students per year in 1980, again well over the IICON "requirement" of 754 annually.

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* As derived in Nursing Education in Illinois: A Reassessment and a Plan, 1975-80, Illinois Implementation Commission on Nursing, Chicago, Illinois, May, 1975, p.18.

Table III-3

Projected Graduates from Illinois Nursing Programs: 1980

Region	Doctoral	Masters	Baccalaureate
1A	0	45	188
1B	0	0	65
2	25	181	1114
3A	0	0	50
3B	0	0	50
4	0	30	100
5	0	0	0
Total	25	256	1567

Note: Figures are derived from institutional projections when available. When not available, the projected graduation level is taken to be equal to the number of graduates, actual or projected, for the latest year for which information is supplied.

Sources: Resource Allocation and Management Program (RAMP) 1975-76, submitted to the Illinois Board of Higher Education by public higher education institutions, Springfield, 1974.

Health Services Education Grants Act applications, submitted to the Illinois Board of Higher Education, Springfield, 1973 and 1975.

The projected graduates in 1980, as compared to 1974, show a doubling in masters degree graduates, over a 70 percent increase in baccalaureate degree graduates, and a probable slight increase in associate degree and diploma graduates combined. If the projected levels are realized, there will be approximately 4,500 new nurses eligible to take the registered nurse licensure examination in 1980, as compared to about 3,500 in 1974 and about 2,400 in 1968.

New programs in nursing which lead to licensure, that is, registered nurse or licensed practical nurse programs, must be approved not only by the educational hierarchy, including faculty, campus administrators, board of trustees, and coordinating board(s), but also by the Illinois Department of Registration and Education.

IV. RECOMMENDATIONS FOR NURSING EDUCATION

Introduction

The report, Education in the Health Fields for State of Illinois, recommended a substantial expansion of nursing education in Illinois: establishment of a doctoral program with 50 annual graduates, an increase of 350 annual graduates from masters programs, an increase of 1,200 annual graduates from baccalaureate programs, and an increase of 1,000 annual graduates from diploma and associate degree programs, all to be accomplished in the period 1968 to 1980.

Much of this recommended increase has been accomplished since 1968. By 1974

- three new masters programs have been begun. Masters degree graduates totaled 138, an increase of nearly 100;
- seven new baccalaureate programs have been started. Graduates totaled 907, an increase of about 600;
- 15 new associate degree programs have been initiated. The increase in graduates has been over 1,200 annually. Graduates from diploma programs have decreased by about 600 annually.

In addition a new doctoral program will begin in the fall of 1975.

The support by the State of Illinois of its public and private post-secondary education institutions has allowed for this rapid growth in nursing education programs. The full results of the commitment made to date, however, are not completely reflected in the 1974 graduation data. Several of the masters and baccalaureate programs are relatively new and have not achieved a full complement of students. If the nursing education programs currently operational meet their projections of graduates, then by 1980

- there will be 25 doctoral graduates in nursing annually, an increase of 25 from 1968;
- there will be about 250 masters degree graduates annually, an increase of over 100 since 1968;
- there will be over 1,500 baccalaureate degree graduates annually, an increase of about 1,200 since 1968. The graduates of diploma and associate degree programs will probably have increased by about 800 annually since 1968.

Nursing Educational Programs

Several factors should be considered in assessing the nursing education structure in Illinois through the remainder of the decade. One of these is nursing needs.

The data presented above show there is a moderate demand for practical and registered nurses in clinical and community facilities. There is a large unmet demand for nurses with graduate education.

There were approximately 5,000 budgeted vacancies for registered nurses in hospitals, long-term care facilities, and community health agencies in Illinois in 1974. The employers prefer that about 2,500 be diploma school graduates, about 1,700 be baccalaureate graduates, and 800 be associate degree graduates. The graduation rate for each of these three types of programs in 1974 was about 1,450, 900, and 1,400 respectively, for a total of 3,750 graduates. Allowing for retirements from the nursing work force, there would be a sufficient number of graduates to fill the present budgeted vacancies for registered nurses within two or three years. This is not to conclude, however, that unmet demand for registered nurses will fall to zero in that time. Demand is imperfectly measured by budgeted vacancies and is also likely to increase in the next few years.

Almost as many licensed practical nurses were graduated in 1974 as there were budgeted vacancies.

The unmet demand for masters and doctoral level nurses is high at present and is expanding as nursing education programs expand their enrollments and as clinical facilities hire more clinical nurse specialists. The 1974 graduates of masters level programs in Illinois were about one-fourth the current unmet demand for graduate nurses.

Another factor to consider is the accessibility and quality of the nursing education programs. There are 123 programs for the education of nurses in Illinois: one at the doctoral level, eight at the masters level, 16 at the baccalaureate level, 32 at the diploma level, 31 at the associate degree level, and 35 at the practical nurse level. The doctoral program is in Chicago. Two masters programs and five baccalaureate programs are in regions other than the Chicago region. There are diploma programs in all regions except regions 4 and 5. There are associate degree and practical nurse programs in every region. The access students have to nursing programs and the access employers have to graduates of basic practical nurse and registered nurse programs is good in most parts of the State.

Of the kinds of educational programs that prepare registered nurses, those at the associate and baccalaureate degree levels have been increasing in recent years, while the number of diploma programs has been declining. Many diploma programs are of high quality, as judged by licensing examination scores of graduates, by accreditation status, and by employability of graduates. These programs currently graduate nearly 40 percent of the new registered nurses each year.

The trend to fewer diploma schools and increased numbers of associate and baccalaureate nursing programs is attributable to many factors. Some

of these include the position of professional nursing that nursing education should be conducted in institutions of higher education,* increasing cost pressures on hospitals, the rapidly expanding community college system, and increasing social emphasis on higher education. The American Nurses' Association has vigorously argued for over a decade that properly prepared professional nurses should be educated in institutions of higher education. In turn many hospitals with diploma programs, under pressures to control costs, have eliminated their nursing education programs, relying upon educational institutions to supply the needed registered nurses. The educational institutions in the late 1960's and early 1970's were quick to respond to new student and employer markets and instituted many new nursing programs. The geographic dispersion of the community colleges in Illinois has offered an opportunity for many communities to maintain the supply of nurses educated in a local institution of higher education.

Various means have been entertained and implemented for the placement of nursing education from diploma schools to institutions of higher education. One is to start an associate degree program in place of a diploma program to provide nurses at the associate degree/diploma level to meet the demands of employers. Another means is the collaboration of diploma programs with colleges or universities to ensure students a maximum number of academic credits. Many diploma schools do collaborate with

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* American Nurses' Association position paper on nursing education, 1965.

community colleges or universities, so that their graduates will receive a year to a year and one-half credit should their graduates wish to complete their education later.

The complete elimination of the diploma school in Illinois at this time would make programs less accessible to students with varying personal and academic needs and would reduce the availability of registered nurses for employers. The associate degree nursing programs might attempt to increase to meet the demand, but this increase would probably not be large enough until a greater number of nurses educated at the graduate level is available for faculty. There should, however, continue to be sufficient flexibility for the transition of diploma nursing schools to registered nursing schools in higher education institutions, if such a transition is to the benefit of students, employers, and the community at large and if such a transition is educationally and economically feasible.

Licensed practical nurses are serving the needs of patients, often in situations in which they are required to perform duties for which they have not been prepared in their pre-service programs. The educational programs for licensed practical nurses are geographically accessible for students in Illinois. They are relatively short and provide an entry point into nursing for a significant number of individuals.

In addition to assessing needs for nurses and the accessibility and quality of programs, increasing attention must be given to the availability of adequate clinical education resources. The number of places available for the clinical education of nurses in Illinois is limited. Some programs are having difficulty in providing the necessary clinical education for the appropriate length of time. Both educational and clinical institutions must collaborate to use the resources of both kinds of institutions efficiently.

Another limiting factor in the clinical education of nurses is the increasing demand for space in clinical facilities caused by the expansion of medical schools. As both undergraduate and graduate medical education programs grow, it will be imperative that educators of nurses, medical educators, educators of other health professionals, and administrators and staff of clinical facilities collaborate in the use of limited numbers of space, patients, and staff.

Illinois has a strong multi-faceted nursing education system, offering quality programs, geographic access and diversity to students, and meeting many of the demands of employers. The system must remain flexible to meet the requirements for nurses with appropriate educational backgrounds. The most serious unmet demand is for nurses educated at the masters degree level. However, universities should not initiate masters degree nursing programs until their baccalaureate program is sufficiently strong to provide an adequate base for a graduate program.

Recommendation 1: Masters degree nursing programs should continue to be expanded to meet the need for nurse educators and nurse specialists. No new masters degree programs should be established at an institution until its baccalaureate nursing program has been accredited.

The existing baccalaureate, associate/diploma, and practical nursing programs are projecting numbers of graduates at levels which exceed those recommended by the Illinois Implementation Commission on Nursing and which will be in excess of the number required to meet the currently expressed needs of the major employers of nurses in Illinois. This is not to conclude that there are no geographic areas of need within the State, but that the initiation of any new nursing

education programs at these levels should be evaluated carefully. Proposals for the transition of existing diploma programs into programs for registered nurses in institutions of higher education should be considered if compelling need for the transition can be shown.

Recommendation 2: No new educational programs for practical nurses, associate degree nurses, diploma nurses, or baccalaureate degree nurses should be established unless a compelling need can be demonstrated unequivocally.

The nursing education system in Illinois will serve citizens and patients, students and employers, well to the extent that the programs are of high quality, meet local, regional, and Statewide needs for nurses, provide access for students, cooperate in the effective use of clinical facilities, cooperate with educational programs for other health professionals to provide education for the health-care team, and provide effective career mobility among programs. Existing programs should possess these characteristics. Demonstration of compelling need for any new program should include evidence that the program will have these attributes.

Recommendation 3: The system of education for nurses in Illinois should be composed of programs characterized by the following:

- Self-study and evaluation of each program's goals and success in meeting these goals. External review and evaluation should be sought and, as appropriate, accreditation obtained.

.. Graduates, who in number and by location of employment, meet the needs for nurses on a local, regional, and, as appropriate, Statewide basis.

.. Flexible scheduling to serve students who work or have other responsibilities.

.. Cooperation with other educational programs for nurses and other health professionals, specifically physicians and allied health professionals, so that:

a. the use of clinical resources is fair and effective;

b. education for the health-care team is enhanced.

Nurses who have specialized clinical training are playing an increasing role in the delivery of health-care services. In some states nurses deliver primary care in an officially sanctioned, interdependent mode. In Illinois the Joint Practice Committee, jointly sponsored by the Illinois State Medical Society and the Illinois Nurses' Association, is examining the appropriate roles and functions of the physician and the nurse. The nursing educational institutions should maintain an appropriate flexibility to respond to the changing role of the nurse in delivering primary health care.

Recommendation 4: Nursing educational programs at the baccalaureate and graduate levels should maintain sufficient programmatic flexibility to respond to the demand, as it is manifested, for nurses educated for interdependent, primary care delivery.

The State of Illinois should continue to support financially the system of nursing education in the State.

Recommendation 5: The State of Illinois should continue to provide financial support for the nursing education programs in Illinois. Funds for those programs in the public sector should be provided through the established budget review and appropriation process. Funds to support nursing programs in the nonpublic sector should also be provided.

Career Mobility.

Career mobility is a desirable concept. The present system of education for nurses provides a structure within which career mobility can be effected. This is particularly important for associate degree, diploma, and licensed practical nurses, many of whom are place-bound with personal responsibilities. Baccalaureate degree programs for nurses should be flexible so that they can enroll diploma and associate degree registered nurses. Although individuals should be encouraged to enter nursing at the level of their choice, upward career mobility should be an option.

Flexible scheduling is particularly important if career mobility is to be effective. Thus, education for nurses should be available evenings, nights, weekends, in the summer, and at other times, and under other conditions convenient for students.

Students should not have to repeat learning experiences for previously acquired competencies. Rather they should be able to progress toward a more advanced educational level by building upon acquired experiences and competencies. Such effective articulation of educational programs is recommended.

Recommendation 6: Educational programs for nurses should plan and implement effective procedures that encourage career mobility.

Associate degree educational programs should articulate with educational programs for practical nurses. It is particularly important that this rung in the career ladder be strong to encourage licensed practical nurses, many of whom are members of low-income and ethnic minority groups, to become registered nurses.

Baccalaureate nursing education programs should continue to admit diploma and associate degree registered nurses. These programs should minimize the amount of duplication of educational and on-the-job experiences for these students.

Special Studies.

What do nurses do and what are good ways for students to learn to be nurses? Educators in Illinois and throughout the country are seeking answers to these questions through research. Two of the most promising areas are task analysis and development of competency-based education.

The goal of task analysis is to describe nursing activities, including those requiring intellectual acumen, inferential thinking, and judgment. Competency-based education is designed to result in specified and demonstrable changes in student behavior which all concerned -- students, teachers, administrators, and others -- can agree represent the learning of competencies often identified through task analysis. This agreement can form the basis for a common language, using descriptions of behavioral changes that can be observed, evaluated, and accepted as appropriate signs of achievement. This common language, in turn, is crucial for activities dependent upon collaboration, such as education of the health-care team and the construction of career ladders.

Recommendation 7: Educational programs preparing nurses should be encouraged to undertake special studies, particularly in task analysis and competency-based instruction. These studies should enhance the effective education of the health-care team and the effective implementation of career ladders.

Affirmative Action.

As in other health professions, there are proportionately fewer nurses who are members of ethnic minority groups. All educational programs for nurses should strive to meet affirmative action commitments.

Recommendation 8: Affirmative action efforts in nursing programs should be continued and expanded. Nursing education programs should attempt to enroll and retain a student mix which ethnically and geographically reflects the population of Illinois.

V. RECOMMENDATION FOR NURSE ASSISTANT PROGRAM EDUCATION

The nurse assistant, although restricted in the health care activities he or she can perform, is an important component of active health personnel in Illinois. There were in excess of 33,000 nurse assistants employed in Illinois hospitals in 1970 and over 15,000 nurse assistants working in long-term care facilities in 1974.* There is probably a great variation in the quality and in the extent of their education and the duties they perform. If patient care is not to suffer, pertinent information on the role and duties of nurse assistants should be gathered, and the structure of educational programs commensurate with the job requirements should be developed.

Recommendation 9: The health care institutions employing nurse assistants and the institutions educating nurse assistants should cooperate in the establishment of guidelines for the standardication of nurse assistant educational programs and for standards of performance for graduates of the programs.

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* Nursing Personnel in Hospitals, 1970, DHEW, 1972.

Nursing Education in Illinois: A Reassessment and a Plan, 1975-1980, Illinois Implementation Commission on Nursing, Chicago, 1975.

September 9, 1975

ALLIED HEALTH PROFESSIONS EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

I. INTRODUCTION

Allied health professionals provide health care in conjunction with physicians, dentists, and nurses. They have moved from an ancillary role to one where they carry responsibility for the care of the patient as members of the health care team, guided by the physi ian or dentist. They are an essential component in the delivery of modern health care.

There are over 200 separate allied health professions. This document addresses only a relatively small portion of the educational programs for the allied health professions. Its focus is upon those educational programs at the one-year certificate, associate degree, baccalaureate degree, and graduate level which require a substantial amount of the student's educational experience to be obtained in a clinical setting, primarily in a hospital, or other institution, such as a rehabilitation center, long-term care institution, or an ambulatory care clinic.

Some of the allied health professionals and their functions, exercised under the appropriate direction of a physician or dentists, are given below.

- Clinical laboratory professionals and radiologic technologists perform analyses and procedures helpful in diagnosis.
- Physical, occupational, respiratory, and radiation therapists provide a variety of therapies and rehabilitative procedures.
- Dental assistants, dental hygienists, and dental laboratory technicians perform dental procedures.

.. Medical artists, medical dietitians, medical record professionals, and operating room technicians are some of the many other allied health professionals providing a wide range of services for the patient.

Throughout this document reference is made to hospitals or clinical institutions for ease of exposition. The reference in all cases includes a broad range of clinical institutions--rehabilitation centers, long-term care facilities, ambulatory care settings, schools, day care centers, and private practice offices, as well as hospitals.

Allied health professions education is generally multi-institutional, involving educational institutions, such as universities, colleges, or community colleges, clinical institutions, and, often, medical or dental schools. The education of allied health professionals usually has two major components: didactic and clinical. Colleges and universities offer didactic education, which includes pre-professional education in general studies, science, and mathematics, and which, sometimes, includes professional education. Clinical institutions offer clinical education, sometimes called an internship or practicum, usually including professional education in theoretical and background topics relevant to the allied health profession and which also includes educational activities with patients, specimens from patients, or records of patients.

There are a number of educational programs preparing allied health professionals in Illinois. The numbers of

graduates in 1973-74 of the types of programs referred to above are displayed in Table 1. Allied health professions education programs have, typically, comparatively small enrollments. Those professions showing a large number of total graduates, such as medical technology and radiologic technology, are often based in hospitals, each hospital program having a small number of annual graduates.

Table 1

1973-74 Awards/Degrees Conferred by Region:
State of Illinois
Selected Allied Health Education Programs

	Region 1A	Region 1B	Region 2	Region 3A	Region 3B	Region 4	Region 5	Total
Dental Assisting								
Associate/Certificate	21	20	176	-	38	43	23	321
Dental Hygiene								
Associate/Certificate	-	17	91	-	46	-	36	190
Baccalaureate	-	-	14	-	-	-	-	14
Subtotal	-	17	105	-	46	-	36	204
Dental Laboratory Technology								
Associate/Certificate	-	-	30	-	-	-	37	67
Dietetics								
Baccalaureate	16	-	28	-	6	-	32	82
Medical Art								
Baccalaureate	-	-	7	-	-	-	-	7
Medical Assisting								
Associate/Certificate	-	23	3	-	-	8	-	34
Medical Laboratory								
Associate/Certificate* (Technician/Assistant)	9	13	119	8	-	19	-	168
Baccalaureate* (Technologist)	35	28	238	17	28	6	-	352
Subtotal	44	41	357	25	28	25	-	520
Medical Record								
Associate/Certificate (Technician)	-	-	14	-	-	10	-	24
Baccalaureate (Administrator or Librarian)	-	-	17	-	22	-	-	39
Subtotal	-	-	31	-	22	10	-	63
Occupational Therapy								
Associate/Certificate (Assistant)	-	7	38	-	-	-	-	45
Baccalaureate (Therapist)	-	-	33	-	-	-	-	33
Subtotal	-	7	71	-	-	-	-	78
Physical Therapy								
Associate/Certificate (Assistant)	-	17	41	-	-	14	20	92
Baccalaureate (Therapist)	6	-	80	-	-	-	-	86
Subtotal	6	17	121	-	-	14	20	178
Radiologic Technology								
Associate/Certificate*	37	32	314	27	18	10	8	446
Baccalaureate*	-	-	4	-	-	-	-	4
Subtotal	37	32	318	27	18	10	8	450
Respiratory Therapy								
Associate/Certificate* (Therapist/Technician)	15	9	153	15	-	-	-	192

* Totals for AMA accredited programs only.

Sources: Higher Education General Information System, Awards Conferred 1973-74.
American Medical Association.

II. ISSUES IN ALLIED HEALTH PROFESSIONS EDUCATION

The 1968 Report, Education in the Health Fields for State of Illinois, encouraged a major expansion of allied health professions education in Illinois in response to an unmet demand. The desired expansion was accomplished in large measure by the initiation of new programs in many different institutional and geographic settings. Since 1968 and particularly in the last two or three years, several factors bearing on allied health professions education have emerged which dictate a careful evaluation of the existing educational system for allied health professions in Illinois. In short, they suggest that a review of existing programs be undertaken, a careful expansion of graduates be encouraged, and closer collaborative relationships be developed among all of the institutions involved in the education of allied health professionals. The particular issues bearing upon these conclusions are discussed in this section.

Manpower Needs. Allied health manpower needs are difficult to assess. Turn-over rates in the professions are high. Relatively few people are employed in a given location, as compared, for example, to nurses. The unmet demands can fluctuate, with the hiring of only a very few professionals into the labor market, from great to none in a short time. There is also a continuing shift in the types and levels of allied health professionals required by employers. The trend

is to employ fewer higher-level professionals, as lower-level people in the same profession become available. However, there is a general increase in demand for allied health professionals as the demand for health care grows. All of these factors mitigate against attempts to determine categorical needs in detail or to structure an inflexible system of educational programs for allied health professionals.

Data do exist on budgeted vacancies in Illinois hospitals for certain types of allied health professionals.* These data should be of use in assessing unmet demand. However, there are major employers other than hospitals for some categories of allied health professionals. Thus, the demand data will have to be interpreted and analyzed with care. The data generally suggest that there is not a large unmet demand in hospitals, except for a few categories of allied health professionals in some areas of the State.

Structure of educational programs for the allied health professions. Historically, allied health professions education occurred in a hospital or in the office of a doctor or a dentist and was devoted primarily to the practical aspects of patient care. Theoretical or background subjects generally were taught only as they were directly pertinent to practice.

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*Profiles of Seven Allied Health Professions, State of Illinois 1974, Illinois Board of Higher Education, Springfield, July, 1975.

As the complexity of health care has increased, allied health professionals have become responsible for more sophisticated duties, frequently demanding breadth of knowledge, inferential thinking, and decision-making abilities. As a result of this change, it is recognized that both educational and clinical institutions have essential and complementary roles in the education of allied health professionals. Colleges and universities are seen as the more appropriate sites for providing the necessary background in science, mathematics, and communication skills. Further, many subjects directly related to the professional aspects of the curriculum can also be taught in an educational institution, thereby freeing clinical institutions to use their educational resources for those learning experiences which can only be offered in their unique setting, particularly those requiring competence, discernment, and judgment at a professional level in a clinical setting.

Two educational patterns at the extremes, with variations between, are found today. One is the "add-on" curriculum. Preprofessional education is essentially separate from professional and clinical education in this pattern. The relation between the educational institution and the hospital does not extend beyond an agreement by the hospital to accept students of its own choosing into its clinical education program at the end of the students' college or university experience. There is little or no mutual educational planning

between the educational institutions and the hospital. There is no agreement by the hospital to accept a given number of students. Thus, the educational institution cannot assure a student of a clinical placement. Even though students receive their degrees from the educational institution when their clinical education is complete, the students are not enrolled in the educational institution during their clinical education; they do not pay tuition, nor does the educational institution bear any cost of the clinical education.

The other pattern is the "integrated" curriculum. Didactic and clinical education are planned and presented as a unit. Teachers from both the college or the university and the hospital work with a common group of students from the beginning of their studies, and didactic and clinical experiences, both preprofessional and professional, are integrated to be mutually reinforcing, and occur at various times in the curriculum. The students enroll at the educational institution for the entire period of their education and pay tuition for the whole period. In turn, the educational institution may contribute to the cost of the clinical education.

The "add-on" format has several disadvantages. The educational institution cannot assure the student a place in a clinical education program. Because of the limited number of clinical education places, a student may, late in his educational program, find that his "major" does not lead to entry into the profession he seeks. The student's program

is fragmented. Educational institutions have little or no influence with hospitals concerning admission or curriculum, and conversely hospitals cannot exercise their interests in these matters. Even after choosing students who have the most appropriate courses or the best grades, the hospitals may have to teach not only professional and clinical subjects, but also topics that could more efficiently be taught in the college or university.

In contrast, a student is usually accepted into an "integrated" baccalaureate program in the sophomore or early-junior year or in the second semester of an associate degree program; thus, the student knows early in the educational program whether he will be able to pursue his career goal in an allied health profession. The integrated program allows for the mutual development of the curriculum by the educational institution and the hospital. Prerequisite, didactic, and some professional topics needed for clinical education can often be provided more efficiently and effectively in the educational institution. Hospitals educate students whose background they have helped to determine. The hospitals may broaden the clinical education beyond those topics needed for certification or immediate employment and provide a more comprehensive professional education.

The "integrated" pattern is preferable in that responsibility is maintained for the student's entire educational experience and the student is assured a complete education

including both didactic and clinical components. The resources of both the educational and clinical institutions in this pattern are used more effectively.

The integrated pattern is being urged by many groups with interest in the education of allied health professionals. The Carnegie Commission on Higher Education has urged greater integration of preprofessional and professional curricula.* Some groups further state that the primary responsibility for the entire curriculum, including the clinical component, should be vested with the educational institution. The Study of Accreditation of Selected Health Educational Programs (SASHEP) recommended that

> ...educational institutions maintaining affiliate relationships with clinical training facilities be required to assume the preeminent responsibility for assuring the quality of the clinical, as well as the didactic, portion of their educational programs.**

The accrediting agency for many allied medical education programs, the American Medical Association's (AMA) Council on Medical Education in collaboration with a variety of professional organizations, is also encouraging educational institutions to assume the primary responsibility for the

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*Higher Education and the Nation's Health, Carnegie Commission on Higher Education, McGraw-Hill, New York, 1970.

**Study of Accreditation of Selected Health Educoation Programs, Commission Report, Washington, D.C., 1972.

educational programs of the allied health professions. Seven of the 24 types of programs accredited by the AMA must be administered by an educational institution. In many of the other programs, educational institutions are the preferred administrative unit.*

Resources for allied health professions clinical education. The number of places available for the clinical education of allied health students in Illinois is limited. Many students, upon completing their didactic education, are unable to find a clinical placement for the completion of their educational program. The bottleneck in the production of allied health professionals is the number of clinical education placements available.

Both educational and clinical institutions must collaborate to use the resources of both kinds of institutions efficiently. If, for example, more clinical placements need to be developed, part of the educational experiences provided by hospitals might be moved into colleges or universities, thereby freeing space and other resources in hospitals for expanding their unique contributions to the education of students in the allied health professions. The provision of sufficient clinical experiences may also require clinical placements in more hospitals than is now the case.

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*Allied Medical Education Directory, 1974, American Medical Association, Chicago, 1974.

A limiting factor in the clinical education of students is the increasing demand for resources in hospitals caused by the expansion of the medical schools. As both the undergraduate and graduate medical education programs grow, it will become imperative that allied health educators, medical educators, and hospital administrators collaborate on the use of limited hospital resources: space, patients, and staff.

The problem of limited clinical resources will not be solved by particular educational institutions and clinical institutions necessarily having exclusive agreements between themselves. Joint planning and cooperation among parties involved must be ongoing and effective if orderly placement of students is to become a reality. Consortial arrangements involving universities, colleges, community colleges, clinical institutions, and medical or dental schools are a means of expanding the number of clinical placements available.

Career mobility. Career mobility among professional strata requiring different levels of education, typically the certificate, associate, and baccalaureate degree levels, is a desirable concept. Although students should be encouraged to enter the allied health professions at the level of their choice, the career ladder should be an option. Perhaps in no other educational field more than in allied health is a career ladder more potentially viable and of more direct service to students and employers. Success in implementing career mobility depends on many factors but chief among them,

perhaps, is the active desire of upper-level programs to accept students from the lower-level programs. It follows that a major responsibility for ensuring career mobility rests with the upper-level educational programs. These, as well as lower-level programs, may need to redesign their curricula.

Financing of clinical allied health professions education. The current financing of clinical allied health professions education in Illinois, as in the country as a whole, is a patchwork. Some programs provide stipends to students, others do not; federal and State grants are made directly to both hospitals and to colleges and universities; and patients in hospitals, primarily via third-party payers, finance much of the clinical education provided in hospitals. A rational, efficient system of financing which provides the correct incentives should be formulated and instituted.

III. RECOMMENDATIONS

1. The Structure of Educational Programs in the Allied Health Professions

Students of the allied health professions should be assured that overall responsibility for their total educational program has been established by a clearly defined procedure or mechanism. This responsibility should include both the didactic and clinical components of the program and should be exercised either by an educational institution or by a collaborative arrangement involving educational institutions, including medical or dental schools, and clinical institutions. In either arrangement the institutions involved should enter into clear and comprehensive agreements among themselves, thereby assuring educational responsibility for the student throughout his program.

Recommendation 1: Allied health professions education programs should be characterized by the following:

- the responsibility for and accreditation of the educational program, including the didactic and the clinical education components, should be exercised by an educational institution or by a consortium including educational institutions, medical or dental schools, and clinical institutions.
- with either arrangement, there should be active, ongoing, and effective joint planning and cooperation concerning admission of students, curriculum, evaluation, and other matters among educational institutions, clinical institutions and, to the appropriate extent, medical or dental schools.

- students should be admitted to the entire program no later than the beginning of the professional component. Admission should be the responsibility of the entity that has program responsibility.

- the staff of the affiliated hospitals who teach in the program should be appropriately recognized by the educational institution.

- the responsibilities of each institution involved in an allied health professions education program should be affirmed in a written agreement.

- each program should engage in self-study and evaluation of its goals and success in meeting those goals. External review and evaluation should be sought and, as appropriate, accreditation obtained.

The multi-institutional nature of the education of allied health professionals, the relatively localized demand for various categories of allied health professionals, the shifting emphasis on special types of allied health professionals, and the need for effective career ladders dictate the importance of close and effective collaborative arrangements among the institutions involved in providing and using allied health professionals. Such collaboration is expected to vary in form and scope dependent upon the particular institutions involved.

It is recommended that appropriate institutions join together in curriculum planning, in the development and utilization of clinical resources, and in joint determination of numbers and types of

allied health professionals to be graduated. An advantage to such collaborative efforts is the maintenance of flexibility to meet local and regional manpower needs. The collaborative arrangements may include formal consortia, with written agreements.

Recommendation 2: Institutions involved in allied health professions education within an appropriately defined geographic area should enter into collaborative agreements. The products of such agreements should include:

- effective meshing of programs at different levels to allow career mobility for students,
- joint planning for the use of clinical resources,
- flexibility with regard to number and size of programs.

As in other health professions, there are proportionately fewer allied health personnel who are members of ethnic minority groups than in the population as a whole. All programs should strive to meet affirmative action commitments.

Recommendation 3: Allied health professions education programs should plan, develop, and implement affirmative action programs. Allied health professions education programs should attempt to enroll and retain students which ethnically and geographically reflect the population of Illinois.

What do allied health professionals do and what are good ways for students to learn to be allied health professionals? Educators in Illinois and throughout the country are seeking answers to these questions through research. Two of the most promising tools in this search are task analysis and competency-based education.

The goal of task analysis is to describe allied health activities, including those requiring intellectual acumen, inferential thinking, and judgment. Competency-based education is designed to result in specified and demonstrable changes in student behavior which all concerned--students, teachers, administrators, and others--can agree represent the learning of competencies, often identified through task analysis. This agreement can form the basis for a common language, using descriptions of behavioral changes that can be observed, evaluated, and accepted as appropriate signs of achievement. This common language, in turn, is crucial for activities dependent upon collaboration, such as education of the health-care team and the construction of career ladders.

Recommendation 4: Allied health professions education programs should, as appropriate, undertake special studies in task analysis and competency-based instruction. The results

of these studies should aid in the effective education of the health team and the effective meshing of certificate, associate, and baccalaureate degree programs.

2. Specific recommendations for educational programs in the allied health professions

It is recommended that a review of existing educational programs for the allied health professions be conducted by the appropriate governing and coordinating boards for public community colleges and universities. Those programs which are educationally of high quality and economically viable should continue. Those which are not should be considered by the appropriate board(s) for possible elimination. The program evaluation should determine whether overall educational responsibility for students is exercised by an educational institution or an effective consortium, whether sufficient and appropriate clinical resources are available, whether the program promotes career mobility, whether financial resources are sufficient for a quality program, and whether the graduates of the program are being employed in the profession for which they were educated. In short the review criteria should include those suggested in the earlier recommendations.

Recommendation 5: Existing educational programs for the allied health professions in public community colleges and universities should be reviewed and evaluated by the Board of Higher Education and by the appropriate governing and coordinating boards to determine if they are educationally and economically justified.

The review of existing programs at the certificate and associate degree levels should provide a basis for determining the needs for and feasibility of new programs in the community colleges, as well as the possible consolidation or elimination of existing programs. The community colleges in Illinois are encouraged to continue in their mission to respond to regional and State manpower needs at the certificate and associate degree level. It is incumbent upon the community colleges and the universities to cooperate closely in establishing career mobility and in jointly using clinical resources. Any new allied health professions education program in a community college should ensure an efficient use of resources and should conform with the general guidelines given above.

Recommendation 6: Community colleges seeking approval of a new allied health professions education program should demonstrate that the proposed program is consistent with the guidelines given above and, specifically,

- is necessary to meet regional and, as appropriate, State manpower needs;
- will be planned and implemented, as appropriate, in cooperation with other community colleges, colleges, universities, medical or dental schools, and clinical institutions;
- will have available resources that are appropriate and sufficient for clinical education;

will be part of an articulated career ladder, as appropriate and feasible, with baccalaureate allied health professions education programs.

The review of existing programs in the allied health professions in the public universities should be based on the guidelines already stated. Such review should also help to determine the need for new programs.

The development of new programs at the baccalaureate and graduate level should complement existing programs of high quality. Although duplication should be avoided, collaboration among institutions should be encouraged. Any new programs at these levels which require extensive preparation in a hospital, such as medical technology, clinical dietetics, physical therapy, occupational therapy, and medical records administration should be developed in conjunction with medical schools. The setting for the clinical education of medical students and these types of allied health students overlap to a large extent. For the efficient use of limited clinical resources and for the enhancement of the health team concept, it is useful for such programs to be coordinated. Also, as these allied health programs must have access to clinical facilities which offer a broad range of teaching experiences, the allied health programs can benefit from the development by the medical schools of clinical educational networks.

Public universities offering allied health professions education programs should, in general, offer the education at the baccalaureate and, as needed, graduate levels, and generally should not offer education of a technical nature which is more appropriately offered at the certificate and associate degree levels by community colleges.

Universities with allied health professions education programs should develop arrangements in cooperation with community colleges to promote career mobility for students. These universities should also promote collaboration among educational and clinical institutions for the implementation of Recommendation 2.

Educational programs in the allied health professions in the nonpublic institutions of higher education in Illinois are an important component of the educational system. The State of Illinois should continue to provide financial support for those programs which are characterized and constrained by the applicable recommendations given above. The nonpublic institutions are encouraged to collaborate with public or nonpublic medical schools in the offering of educational programs for the allied health professions.

Recommendation 7: The State of Illinois should continue to provide money in support of educational programs for allied health professions in nonpublic institutions of higher education. To be eligible for support, programs should be characterized by the applicable recommendations above.

Because of the multi-institutional nature of allied health professions education, funds for these programs come from a variety of sources. In the past, educational institutions have been mainly responsible for financing the didactic education component, and clinical institutions have been mainly responsible for financing the clinical education component. In concert with the earlier recommendations for educational responsibility and collaborative educational delivery, and in recognition of the dual method of current financing, it is recommended that both educational and clinical institutions continue to contribute to the financing of allied health professions education.

Recommendation 8: Both educational institutions and hospitals should continue to share in the financing of clinical allied health professions education. The State of Illinois funds available for allied health professions education should be allocated to the educational institutions, or to consortia of educational and clinical institutions which may, as appropriate, be used to support partially the educational component offered in the hospitals.

September 9, 1975

PUBLIC HEALTH AND HEALTH ADMINISTRATION EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

PUBLIC HEALTH AND HEALTH ADMINISTRATION EDUCATION

The health industry in recent years has employed increasing numbers of professional workers in aspects of health care related to, but not directly involved with, the provision of health care to people. Disease prevention, environmental protection, health care delivery systems, occupational and industrial health protection, as well as management of health agencies and institutions are examples of functions these health workers perform. Schools of public health as well as health administration programs educate these professionals.

The discipline of public health has several subcategories and specialties, including

- biometry, the mathematical and statistical analysis of biomedical data,
- epidemiology, the science dealing with the incidence, distribution, and control of disease in a population,
- environmental health, the study of environmental problems with emphasis on health aspects,
- health care services, the study of the legal, organizational, financial, and social aspects of health care systems,
- occupational health, the analysis and solution of health and environmental problems in industrial settings,
- international health, the study of health issues, such as family planning and the communication of disease, worldwide,
- health systems management, the study of health care planning and the administration of health agencies and institutions.

Programs for the education of people in these disciplines are often grouped within schools of public health. There are 18 such schools

now operational in the United States, with two more scheduled to open within the next year. The educational programs in these schools are at the graduate level, typically offering both masters and doctoral programs, emphasizing either the research in or application of the discipline, or both.

The School of Public Health at the Medical Center campus of the University of Illinois is the only such school in Illinois. It was initiated in response to the 1968 report, Education in the Health Fields for the State of Illinois. The School presently offers two masters degrees, an M.S. and an M.P.H. The 1968 report mandated the School to develop appropriate doctoral degree programs in public health. A Ph.D. and a Dr.P.H. are proposed. The former is a research degree for the student wishing to be a researcher or educator; the latter is for the student who wishes to be an applied practitioner of the discipline in public health and health planning agencies.

Although the administration of health care institutions is an academic subject often taught in schools of public health, there are many other educational settings for such programs.

Health administration, per se, has been defined as those activities involving

> planning, organizing, directing, controlling, coordinating, and evaluating the resources and procedures by which needs and demands for health and medical care and a healthful environment are fulfilled by the provision of specific services to individual clients, organizations, and communities.*

*This is the official definition of health administration adopted by the Commission of Education for Health Administration. See page 149 of Education for Health Administration, Health Administration Press, Ann Arbor, 1975.

This definition is broad, attempting to cover the activities of people employed in administrative positions in the following institutions: hospitals, ambulatory care facilities, mental health facilities, public health agencies, voluntary health agencies, environmental agencies, health planning agencies, third-party payer agencies, colleges and universities, and others.

The institutions employing health administrators may be classified in three major categories. There are those institutions which provide health care services, such as hospitals. Administrative personnel in such settings should include people who have the management skills needed in any large institution: personnel, financial, organizational, as well as knowledge of medical and nursing practice, health service law, and health planning. The service facility settings, particularly hospitals, have been historically the major employers of health administrators. The second category of institutional employers is the colleges and universities which require health administration educators for the educational programs. These persons are usually specialists in a management, administration, or a health discipline. The third category includes governmental agencies, health-care associations, and health planning groups. The employees in such institutions utilize the skills and knowledge of public administration and business administration, as well as detailed knowledge of the health service sector. Although there are common educational requirements for administrators in each of these settings, each requires a different emphasis.

Two reeent studies have addressed the question of education for health administration. The first* concerned the educational needs and existing programs in Illinois. This report predated a national study** by about a year. The Illinois study provides some data on the existing health administration programs in the State. The national study gives some general guidelines for the development of health administration programs, calling for a pluralistic system of educational programs which will be responsive to employment needs and which have a broad curricular base.

In addition to the programs in the School of Public Health, there is one doctoral level program, five masters programs, and one baccalaureate program in health administration in Illinois. The University of Chicago's Ph.D. program, begun in 1934, emphasizes hospital administration. The masters programs are at Governors State University, Northwestern University, Rush University, Sangamon State University, and the University of Chicago. The baccalaureate program is offered by Sangamon State University. Only the University of Chicago and Northwestern University programs have been operational for more than five years.

There are no comprehensive data on the number of people employed in health administration positions in the United States or in Illinois. Nor is there much data on the educational preparation or background of administrators of health service institutions.

It is apparent, however, that two trends are at work which are increasing the demand for people educated in health administration. The

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*Brown, M. and B. P. McCool, "A Report on Hospital and Health Administration Manpower," Northwestern University, Chicago, 1974.

**Education for Health Administration, Ann Arbor, 1975.

first is the burgeoning number of health care and health planning positions. As an example, the Federal government has mandated the establishment of health service and health planning regions, which will total about 200 in number. The law further specifies the number and types of personnel to be employed in these agencies. In the health service sector, demand for administrators in new ambulatory care centers, long-term care facilities, and health maintenance organizations is increasing rapidly. The second major factor bearing on the need for educational programs in health administration is the escalating requirements for the education of such people. By law health administrators in some types of institutions must have achieved specified educational levels.

Demand for graduate-level personnel in the public health disciplines is also growing. The increasing emphasis on environmental problems and occupational safety generates demand in the subdisciplines of public health. Schools of public health are also particularly appropriate to meet the demand for health planners and health researchers and educators.

The recommendations encourage the further development of educational programs in public health and health administration to meet the needs of students and employers in the State.

Recommendation 1: The School of Public Health of the University of Illinois should continue the development of its masters and doctoral level programs. Being the only school of public health in Illinois, it should strive to meet the needs of students and employers in the State in those disciplines it uniquely offers. Its programs should be characterized by

- responsiveness to State and national needs for public health officials and educators,
- responsiveness to needs for public service throughout Illinois related to its educational programs, including continuing education,
- accessibility to part-time students, by offering evening and weekend courses.

Recommendation 2: Several health administration programs in public and private universities should be supported. These programs should provide differing emphases in health administration. In evaluating requests for financial support or for program approval, the following criteria should be considered:

- documented demand for graduates of the program,
- educational strength of the institution in related disciplines, such as public administration, business administration, social sciences, and health programs,
- collaborative relationships with health care and health education institutions.

July 1, 1975

PODIATRIC MEDICAL EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

PODIATRIC MEDICAL EDUCATION

The podiatry profession deals with the examination, diagnosis, prevention, treatment, and care of conditions and functions of the human foot. Podiatrists perform surgical procedures on the foot, prescribe and administer drugs, prescribe orthopedic devices, and administer physical therapy to treat the patient. Podiatric patients come from all age groups, but have a relatively high percentage who are 65 years and older. The podiatrist, even as a medical specialist, often serves as an elderly person's initial contact with a health care professional.

Illinois ranks seventh among the states and the District of Columbia in active podiatrists per capita (Table 1), having about 50 percent more per capita than the national average. The active Illinois podiatrists are statistically comparable with their national counterparts in terms of age (Table 2). The median age is 50, which is high relative to many other health professions.

The geographic distribution of registered podiatrists in 1974 is displayed in Table 3. There are considerably more podiatrists per capita in the Chicago region than any other region in the State. Nearly half (47) of the counties in Illinois have no registered podiatrist.

There are presently six colleges of podiatric medicine in the United States; five are nonpublic and free-standing; the public school is in New York. In addition a new public school will be established in Texas. The education of a podiatrist requires four years of professional education, after at least two years of pre-professional education at a college or university. Of the Illinois College of Podiatric Medicine's entering class in 1974-75, 80 percent had a baccalaureate degree.

Table 1

Active Podiatrists by State, 1970

Rank	State	Number	Number per 100,000
1	District of Columbia	57	7.6
2	Massachusetts	395	6.9
3	New York	1,232	6.7
4	Connecticut	180	5.9
5	Rhode Island	56	5.9
6	Pennsylvania	690	5.8
7	Illinois	600	5.4
8	New Jersey	360	5.0
9	Ohio	526	4.9
10	Delaware	22	4.0
11	California	733	3.7
12	Iowa	94	3.3
13	Nevada	16	3.2
14	Colorado	70	3.1
15	Michigan	271	3.0
16	Wisconsin	134	3.0
17	New Hampshire	21	2.8
18	Nebraska	42	2.8
19	Indiana	146	2.8
20	Florida	190	2.8
21	Maryland	98	2.5
22	West Virginia	43	2.5
23	Utah	25	2.3
24	South Dakota	15	2.3
25	Idaho	16	2.2
26	Maine	22	2.2
27	Arizona	37	2.1
28	Minnesota	78	2.0
29	Montana	14	2.0
30	Kansas	45	2.0
31	New Mexico	20	2.0
32	Washington	64	1.9
33	Oklahoma	47	1.8
34	Missouri	85	1.8
35	Kentucky	55	1.7
36	Oregon	35	1.7
37	Texas	188	1.7
38	Wyoming	5	1.5
39	Vermont	6	1.3
40	Virginia	58	1.2

Table 1 (Continued)

Rank	State	Number	Number per 100,000
41	Georgia	57	1.2
42	Louisiana	40	1.1
43	North Carolina	56	1.1
44	North Dakota	6	1.0
45	Arkansas	18	0.9
46	Tennessee	29	0.7
47	Alaska	2	0.7
48	Hawaii	5	0.6
49	Alabama	20	0.6
50	South Carolina	13	0.5
51	Mississippi	8	0.4
	United States	7,045	3.5

Source: Monthly Vital Statistics Report, National Center for Health Statistics, Vol. 19, No. 11, February 8, 1971.

Table 2

Characteristics of Active Illinois and United States Podiatrists

Age	Illinois	United States
Under 35	13.4%	13.3%
35 to 44	18.6%	20.6%
45 to 54	29.5%	28.7%
55 to 64	23.1%	27.2%
65 and Over	15.4%	10.2%
Median Age	50	50

Source: Podiatry Manpower: A General Profile, United States - 1970, DHEW Publication No. (HRA) 74-1805, August, 1973.

Table 3

Registered Podiatrists in Illinois; 1973

Region	Number	Number per 100,000
1A	23	4.0
1B	54	5.7
2	617	8.7
3A	33	5.9
3B	27	3.5
4	5	0.8
5	16	3.1
Total	775	7.0

Source: Survey of Practicing Doctors of Podiatric Medicine in the State of Illinois by Counties, December, 1973, Illinois College of Podiatric Medicine; February, 1975.

The Illinois College of Podiatric Medicine was established over 60 years ago. It is located in Chicago contiguous with a foot clinic, the largest in the world, that serves 30,000 to 35,000 patients a year. The College has several clinical affiliations with Chicago area hospitals in which podiatric students see patients. The College also is affiliating with Roosevelt University in order to offer the baccalaureate degree to those students who enter the professional curriculum without it.

The College has 452 students enrolled in 1974-75 with an entering class of about 150. It is projecting a total enrollment of about 600. There are approximately four applicants for every position available. There are 127 Illinois resident students enrolled in 1974-75, comprising 29 percent of the total enrollment.

Colleges of podiatric medicine were recognized by the Federal Comprehensive Health Manpower Training Act of 1971 for purposes of Federal capitation grants and special project grants. The approved capitation level is $800 per student as compared to $2,500 for medicine. Tuition in the free-standing schools provides the bulk of their revenue. In addition to tuition and Federal grants, the private colleges in California, New York, and Pennsylvania all receive state support ranging from about $100,000 annually to over $800,000 annually. Ohio will support its college in 1975-77.

The Illinois College of Podiatric Medicine has received only $34,000 in direct State support since 1971-72 and an additional $47,000 in Federal monies administered by the Board of Higher Education. Tuition at the College is $3,000 annually. The source of funds is tuition and fees, 54 percent; clinics and hospital, 11 percent; Federal grants, 27 percent; and other, 8 percent.

Summary and Recommendations.

The podiatrist is a medical specialist, trained in the care of the foot, and is an important provider of professional health care. Illinois ranks high among the states in number of podiatrists per capita, but has a marked geographic maldistribution within the State.

The Illinois College of Podiatric Medicine is one of six colleges nationally. All of the private schools will be supported in part by their states of location in the next fiscal year.

The recommendations would have the State of Illinois provide an annual operating grant to the Illinois College of Podiatric Medicine for each Illinois resident student it enrolls, the amount approximating one third of the average annual educational cost, as estimated by the Institute of Medicine. They also stress affirmative action efforts by the College.

Recommendation 1: An annual operating grant of $1,900 per Illinois resident student be made available by the State of Illinois for the Illinois College of Podiatric Medicine. This amount should be reviewed and adjusted annually, as appropriate, to reflect inflationary increases.

Recommendation 2: The Illinois College of Podiatric Medicine should maintain and expand its affirmative action efforts. The College should attempt to enroll and retain an Illinois student mix which ethnically and geographically reflects the Illinois population.

September 9, 1975

VETERINARY MEDICINE EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

VETERINARY MEDICINE EDUCATION

Veterinary medicine is concerned with the prevention, treatment, and alleviation of disease and injury in animals. The profession is also concerned with the protection of human health, by the prevention and control of diseases transmissible from animals to man and by employment in regulatory and public health aspects of veterinary medicine. Veterinarians employed in regulatory and public health agencies assist in the provision of safe meat and dairy products.

The data displayed in Table 1 show that Illinois has about six percent fewer veterinarians per capita than the nation as a whole. The leading states are predominantly midwestern states with a large livestock industry. Assessing needs or even making comparative studies of veterinarians based on population ratios is particularly fraught with analytic pitfalls. Over 70 percent of the active veterinarians work in animal practice; of the total, nearly 45 percent are employed in small animal practice.* While the need for small animal practice may be directly related to population, that for large animal practice is not. A study by the National Academy of Sciences-National Research Council has estimated a need of 17.5 veterinarians per 100,000 population.** An additional 600 veterinarians are needed in Illinois to reach this figure.

The distribution of veterinarians by planning region in Illinois is shown in Table 2. There are more veterinarians per capita in the non-metropolitan regions than in the predominantly urban regions.

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* The Supply of Health Manpower, DHEW No. (HRA) 75-38, 1974.

** New Horizons for Veterinary Medicine, National Academy of Sciences, Washington, 1972.

Table 1.

Active Veterinarians by State: 1970

State	Rank	Number	Number per 100,000
Iowa	1	1,190	41.9
South Dakota	2	210	31.7
Nebraska	3	450	30.3
Kansas	4	610	27.1
Montana	5	190	26.7
Colorado	6	590	26.6
Wyoming	7	90	26.0
Idaho	8	160	22.9
Minnesota	9	780	20.4
Vermont	10	90	19.7
Washington	11	610	17.9
Nevada	12	80	17.2
Oklahoma	13	420	16.3
Maryland	14	640	16.3
Missouri	15	760	16.2
North Dakota	16	100	16.2
Oregon	17	320	15.3
Indiana	18	800	15.3
Wisconsin	19	670	15.0
Texas	20	1,640	14.6
Delaware	21	80	14.2
New Mexico	22	140	14.1
Arizona	23	240	13.7
Georgia	24	620	13.4
Alabama	25	440	12.8
California	26	2,560	12.8
Florida	27	850	12.4
Virginia	28	570	12.2
Illinois	29	1,340	12.0
New Hampshire	30	90	11.6
Ohio	31	1,220	11.4
Utah	32	120	11.3
Michigan	33	990	11.1
Arkansas	34	210	11.0
Kentucky	35	350	10.9
District of Columbia	36	80	10.8
Maine	37	100	9.9
Mississippi	38	210	9.7
Hawaii	39	70	8.8
Tennessee	40	340	8.7
Pennsylvania	41	1,010	8.5
New York	42	1,540	8.4

Table 1 (Continued)

State	Rank	Number	Number per 100,000
Louisiana	43	310	8.4
Connecticut	44	250	8.1
North Carolina	45	410	8.0
New Jersey	46	570	7.9
Alaska	47	20	7.9
South Carolina	48	200	7.8
Massachusetts	49	390	6.8
West Virginia	50	90	5.1
Rhode Island	51	50	4.9
United States	--	25,800	12.7

Source: The Supply of Health Manpower, DHEW Publication No. (HRA) 75-38, December, 1974.

Table 2

Veterinarians in Illinois 1973

Region	Number	Number per 100,000
1-A (Rockford)	120	20.8
1-B (Peoria)	170	17.9
2 (Chicago)	590	8.3
3-A (Springfield)	130	23.4
3-B (Urbana/Champaign)	180	23.6
4 (East St. Louis)	60	9.3
5 (Carbondale)	80	15.4
Total	1,330	11.9

Source: State of Illinois Statistical Abstract 1973, State of Illinois Bureau of the Budget.

There were 18 schools of veterinary medicine which had graduates in 1973, graduating approximately 1,300 veterinarians. The College of Veterinary Medicine at the University of Illinois at Urbana/Champaign is the only school of veterinary medicine in Illinois. There were 51 graduates from the program in 1968 and 62 in 1973. Federal health manpower funding has supported an increase in the College's enrollment to a class size of 86. In 1974 there were over six qualified applicants for every position in the first-year class.

In addition to its instructional programs, the College has active research and public service programs, with emphasis on the needs of the agricultural industry.

The University of Illinois administration and the College of Veterinary Medicine faculty have formulated plans which, if funded, would increase the number of graduates to 100 annually by the early 1980's. A new small animal clinic was completed in 1972 and a new large animal clinic will be available for occupancy soon. These facilities will each accommodate teaching programs for a class size of at least 100. It will be necessary to remodel existing facilities or construct a new facility to provide sufficient space for the basic science component of the curriculum.

Slightly over half of the active graduates of the College are practicing veterinary medicine in the State. If 60 percent of 100 graduating veterinarians were to remain in Illinois, then the graduation rate would be sufficient over time to achieve the ratio of 17.5 veterinarians per 100,000 population.

Recommendation: The College of Veterinary Medicine should expand its class size to 100 as soon as is feasible. Being the only school of veterinary medicine in the State, the College should maintain and expand its instructional, research, and public service programs to serve the needs of all of Illinois. As appropriate and feasible, the College of Veterinary Medicine should:

- emphasize programs to retain graduates for practice in Illinois,
- admit and retain students geographically and ethnically representative of Illinois as a whole,
- engage in research relevant to the needs of Illinois, and
- provide continuing education and other public service programs.

July 1, 1975

OPTOMETRIC EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

OPTOMETRIC EDUCATION

Optometrists are concerned with problems of human vision. They examine the eyes and related structures to determine the presence of visual, muscular, neurological, or other abnormalities. They prescribe and adapt lenses or other optical aids and may use visual training aids to preserve or restore maximum efficiency of vision. Most optometrists also fit and supply the eyeglasses they prescribe.

Illinois enjoys the enviable position of ranking first among all of the states in terms of active optometrists per capita (Table 1). However, the number of active optometrists has been declining. One estimate shows an 18 percent decline in the period from 1970 to 1973. The age distribution of active Illinois optometrists is markedly skewed toward the older practitioner (Table 2). It appears that there will continue to be large numbers of practitioners exiting the labor force in the next decade.

The geographic distribution of active optometrists within Illinois is shown in Table 3. Each region has more active optometrists per capita than the national average. There are 14 Illinois counties which have no optometrists.

There are 13 schools of optometry in the United States; eight are affiliated with a university and five are independent institutions. The Illinois College of Optometry, one of the independent schools, has been in operation for over a century. The College is accredited by the North Central Association, as well as by the optometric education association's accrediting body. The education of optometrists requires four years of professional education after at least two years of pre-professional

Table 1

Active Optometrists
by State, 1970

State	Rank	Number	Number per 100,000
Illinois	1	1,620	14.5
Rhode Island	2	130	13.7
South Dakota	3	90	13.5
Montana	4	90	12.8
Oregon	5	270	12.6
Massachusetts	6	720	12.6
Idaho	7	90	12.6
Wyoming	8	40	12.0
Iowa	9	330	11.7
North Dakota	10	70	11.3
California	11	2,240	11.2
Maine	12	110	11.1
Kansas	13	240	10.7
Washington	14	350	10.3
Nebraska	15	150	10.1
Indiana	16	510	9.8
Pennsylvania	17	1,140	9.6
Wisconsin	18	420	9.5
New Jersey	19	680	9.5
New Hampshire	20	70	9.4
Oklahoma	21	240	9.3
District of Columbia	22	70	9.3
Minnesota	23	350	9.2
Vermont	24	40	8.9
Missouri	25	420	8.9
New York	26	1,610	8.8
Ohio	27	940	8.8
West Virginia	28	150	8.6
Connecticut	29	260	8.6
Nevada	30	40	8.1

Table I (Continued)

State	Rank	Number	Number per 100,000
Colorado	31	180	8.1
Michigan	32	700	7.9
Arkansas	33	150	7.8
Hawaii	34	60	7.8
Kentucky	35	240	7.4
Tennessee	36	290	7.4
Florida	37	500	7.3
Delaware	38	40	7.3
Arizona	39	130	7.3
New Mexico	40	70	6.9
Texas	41	760	6.8
Alaska	42	20	6.6
Utah	43	70	6.5
North Carolina	44	310	6.1
Louisiana	45	220	6.0
Mississippi	46	130	5.9
Virginia	47	270	5.8
South Carolina	48	150	5.8
Georgia	49	260	5.6
Alabama	50	180	5.2
Maryland	51	180	4.6
United States		18,400	9.0

Source: The Supply of Health Manpower, DHEW Publication No. (HRA) 75-38, December, 1974.

Table 2

Characteristics of
Active Illinois and United States
Optometrists

	Illinois	United States
Age		
Under 30	5.8%	8.8%
30 to 39	6.9%	14.4%
40 to 49	29.2%	34.9%
50 to 59	39.2%	27.7%
60 and over	18.9%	14.7%
Median age	51	47
Principal type of practice		
Solo practice	57.9%	73.5%
Partnership	11.9%	11.9%
Group practice	3.0%	2.9%
Employed by other optometrist or physician	10.2%	6.1%
Firm or corporation	6.4%	3.4%
Other	10.6%	2.2%

Sources: Licensed Optometrists in Illinois 1973, DHEW, September, 1974.

The Supply of Health Manpower, DHEW Publication No. (HRA) 75-38, December, 1974.

Table 3

Active Optometrists
in Illinois: 1973

Region	Number*	Number per 100,000
1A	80	14
1B	120	13
2	1,090	15
3A	70	13
3B	120	16
4	70	11
5	70	13
Total	1,610	14

* Adjusted for non-respondents to survey.

Source: Licensed Optometrists in Illinois 1973, DHEW, September, 1974.

education. Currently about one-half of the entering class at the Illinois College of Optometry has four or more years of pre-professional education. The Illinois College has a campus located in Chicago and operates vision clinics in 11 separate locations in Chicago, providing eye-care services to about 50,000 people annually.

Of the approximately 1,610 active optometrists in Illinois, about 1,540, or 96 percent, are graduates of the Illinois College of Optometry or its predecessor institutions.* The College has 532 students enrolled in 1974-75. Of these, 161 are Illinois residents. About 30 percent of the student body has been Illinois residents for each of the last three years.

The independent optometry schools are financed primarily by student tuition, Federal capitation grants, special Federal grants, and limited State support. Schools of optometry were recognized by the Federal government for purposes of funding in the Comprehensive Health Manpower Training Act of 1971. This law specified a capitation funding level of $800 per student, as compared to $2,500 for medicine. Some of the non-public schools of optometry do receive some State support for their operation. Many of these schools receive contract support from states for every student enrolled from the particular state. The Southern College of Optometry has financial contracts with all of the states in the Southern Region Education Board. The two California schools of optometry have contracts with the western states in Western Interstate Commission for Higher Education.

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* Licensed Optometrists in Illinois 1973, DHEW, September, 1974.

The Illinois College of Optometry has received only minimal State of Illinois support. The College received about $14,000 in 1974-75 under the auspices of the Illinois Financial Assistance Act for those Illinois students who had not completed their baccalaureate degree upon matriculating at the College. The income sources for the College in 1973-74 were: tuition, 67 percent; Federal grants, 27 percent; Illinois grants, 1 percent; other, 5 percent. The tuition level is $2,520 per student in 1974-75.

Summary and Recommendations

The optometrist provides important health care services. Although Illinois ranks first among the states in active optometrists per capita, the Illinois population of active optometrists is, on the average, relatively old.

The Illinois College of Optometry is one of five private optometry schools in the country; there are eight schools affiliated with universities. Most of the private schools receive some financial support from the states in which they are located and from states which send students to these schools.

The recommendations would have the State of Illinois provide an annual operating grant to the Illinois College of Optometry for each Illinois resident student it enrolls, approximately one-third of the average annual educational cost, as estimated by the Institute of Medicine. They would also stress affirmative action efforts for the College.

Recommendation 1: An annual operating grant of $1,400 per Illinois resident be made available by the State of Illinois for the Illinois College of Optometry. This amount should be reviewed and adjusted annually, as appropriate, to reflect inflationary increases.

Recommendation 2: The Illinois College of Optometry should maintain and expand its affirmative action efforts. The College should attempt to enroll and retain an Illinois student mix which ethnically and geographically reflects the Illinois population.

Recommendation 2: The Illinois College of Optometry should maintain and expand its affirmative action efforts. The College should attempt to enroll and retain an Illinois student mix which ethnically and geographically reflects the Illinois population.

July 1, 1975

PHARMACY EDUCATION: Health Education Commission Recommendations for use in developing the Illinois Master Plan--Phase IV.

Commission staff: J.T. McGill

State of Illinois
Board of Higher Education

PHARMACY EDUCATION

The pharmacist dispenses prescription drugs and consults with patients on prescription and non-prescription drug-related matters. The scope of the pharmacist's activities includes community practice, institutional practice, government service, industrial operations, and association and journal management. Within these activities, the practitioner may act as a consultant to nursing homes, detail drugs to physicians and other professionals, engage in pharmaceutical research or retail sick room or non-health related merchandise.

Illinois has slightly more active pharmacists per capita than the nation as a whole, and ranks 25th among the states and District of Columbia (Table 1). The number of active pharmacists per capita in Illinois is about 2 percent higher than the national per capita figure. Only New Jersey and Massachusetts, among the ten most populous states, have more active pharmacists per capita than Illinois. Earlier published statistics have shown Illinois in a much less favorable relative position. These data did not properly account for multiple licenses, thus overcounting active pharmacists in many states. The information upon which Table 1 is based is drawn from a nationwide survey of pharmacists with a response rate of about 90 percent. Duplicate licentiates are properly accounted for.

As in the other health professions, there not a uniform distribution of pharmacists throughout Illinois (Table 2). The Chicago region has the largest number of active pharmacists per capita and the Urban/Champaign region has the fewest.

Table 1 *

Active Pharmacists by State 1973

Rank	State	Number	Number per 100,000
1	Colorado	1,560	69
2	Arizona	1,340	63
3	Wyoming	1,200	61
4	District of Columbia	440	61
5	Connecticut	1,810	59
6	Nebraska	880	59
7	North Dakota	360	59
8	Washington	1,970	58
9	Rhode Island	530	57
10	Montana	400	57
11	Idaho	410	56
12	Massachusetts	3,130	55
13	Oregon	1,180	55
14	Nevada	270	54
15	Oklahoma	1,350	53
16	Tennessee	2,070	52
17	New Mexico	530	52
18	South Dakota	340	52
19	Indiana	2,690	51
20	Iowa	1,460	51
21	Georgia	2,310	50
22	New Jersey	3,640	50
23	Kansas	1,100	50
24	Minnesota	1,900	49
25	Illinois	5,420	49
26	South Carolina	1,240	49
27	Arkansas	940	48
28	Florida	3,360	48
29	Missouri	2,260	48
30	Wisconsin	2,140	48
31	Michigan	4,220	47
32	Louisiana	1,710	47
33	New Hampshire	330	46
34	New York	8,500	46
35	California	9,190	46

Table 1 (Continued)

Rank	State	Number	Number per 100,000
36	Kentucky	1,500	46
37	Utah	500	46
38	Ohio	4,940	46
39	Mississippi	1,000	45
40	Pennsylvania	5,350	45
41	Alabama	1,550	45
42	Maryland	1,760	45
43	Virginia	1,960	43
44	Vermont	200	43
45	Texas	4,840	43
46	North Carolina	1,980	39
47	Maine	390	39
48	Delaware	210	38
49	West Virginia	630	36
50	Alaska	100	35
51	Hawaii	190	26
	United States	98,090	48

Source: Rodowskas, C.A. and W. M. Dickson, "The Pharmacy Manpower Information Project, A Profile of the Profession," presented at the Annual Meeting of the American Pharmaceutical Association, San Francisco, April 24, 1975.

* The figures in this table represent respondents only to a national survey. Figures adjusted for non-respondents will be used when available.

Table 2

Distribution of Active Pharmacists in Illinois: 1973

Region	Number*	Number per 100,000
1A	280	49
1B	470	50
2	4,230	59
3A	290	52
3B	310	41
4	290	45
5	220	42
Total	6,090	55

* Adjusted for non-respondents to survey.

Source: Registered Pharmacists in Illinois, 1973, DHEW, February, 1974.

Some comparative statistics of active Illinois pharmacists and active pharmacists nationwide are displayed in Table 3. Illinois pharmacists are older than pharmacists nationwide with 27 percent of the active Illinois pharmacists being 55 years or older. A larger percentage of active Illinois pharmacists are employed in community pharmacies than are pharmacists nationwide.

The only pharmacy education program in Illinois is the College of Pharmacy of the University of Illinois at the Medical Center, Chicago. The College has been expanding its program. In 1968 there were approximately 100 graduates. The number of graduates will have increased to about 140 in 1975. The projected number of graduates in 1980 is 170.

Only 48 percent of all active pharmacists in Illinois are graduates of the University of Illinois. Graduates of pharmacy schools in Missouri and Iowa account for 25 percent of the active pharmacists.

The recommendation encourages the continued expansion of the College of Pharmacy and urges that it continue to develop programs to meet the pharmacy manpower needs throughout the State.

Recommendation 1. The College of Pharmacy should continue its planned enrollment expansion through 1980. Being the only school of pharmacy in Illinois, the College should maintain and expand its programs to provide pharmacists for all parts of Illinois. As appropriate and feasible, the College of Pharmacy should:

- emphasize and continue to develop the clinical component of its instruction,
- admit and retain students geographically and ethnically representative of Illinois as a whole.

Table 3

Characteristics of
Illinois and United States
Active Pharmacists

	Illinois	United States
Age		
Under 35	33.0%	36.0%
55 and Over	27.0%	23.0%
Median Age	43	40
Race		
White	94.8%	94.2%
Black	3.3%	1.7%
Spanish-Surname	0.6%	1.7%
Others	1.4%	2.4%
Principal Place of Practice		
Community pharmacy, independent	50.5%	47.2%
Community pharmacy, chain	28.5%	26.6%
Hospitals and nursing homes	11.8%	14.6%
Manufacturing	3.9%	4.7%
Other	5.3%	6.9%

Sources: "The Pharmacy Manpower Information Project, A Profile of the Profession," Rodowskas, C.A. and W.M. Dickson, at the Annual Meeting of the American Pharmaceutical Association, San Francisco, April 24, 1975.

Registered Pharmacists in Illinois 1973, DHEW, February, 1974.

develop externships or clerkships for students throughout Illinois, and

strengthen and broaden continuing education programs for practicing pharmacists throughout Illinois.